

## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
6 January 2005 (06.01.2005)

PCT

(10) International Publication Number  
**WO 2005/000903 A1**

- (51) International Patent Classification?: **C08B 11/14**, 11/193
- (21) International Application Number: **PCT/US2004/016788**
- (22) International Filing Date: **27 May 2004 (27.05.2004)**
- (25) Filing Language: **English**
- (26) Publication Language: **English**
- (30) Priority Data: **60/479,627** **17 June 2003 (17.06.2003)** **US**
- (71) Applicant (for all designated States except US): **UNION CARBIDE CHEMICALS & PLASTICS TECHNOLOGY CORPORATION [US/US]; 39 Old Ridgebury Road, Danbury, CT 06817-0001 (US).**
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **KREEGER, Russell, L. [US/US]; 4 Cornfield Terrace, Flemington, NJ 08822 (US). ZHOU, Shuiqin [CN/US]; 966 Westwood Avenue, Staten Island, NY 10134 (US).**
- (74) Agent: **WARREN, Jennifer, S.; The Dow Chemical Company, Intellectual Property, P.O. Box 1967, Midland, MI 48641-1967 (US).**
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): **AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.**
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): **ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).**
- Published:**  
— *with international search report*
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: **CELLULOSE ETHERS**

(57) Abstract: A cellulose ether which has from 4,000 to 10,000 anhydroglucose repeat units and is substituted with (a) on the average from 0.0003 to 0.08 moles, per mole of anhydroglucose unit, of a substituent comprising an alkyl or arylalkyl group having from 8 to 24 carbon atoms and (b) a substituent having the formula II wherein R<sup>5</sup>, R<sup>6</sup> and R<sup>7</sup> each independently are -CH<sub>3</sub> or -C<sub>2</sub>H<sub>5</sub>, R<sup>8</sup> is -CH<sub>2</sub>-CHOH-CH<sub>2</sub>- or -CH<sub>2</sub>CH<sub>2</sub>, A<sup>z-</sup> is an anion, and z is 1, 2 or 3 is useful in hair and skin care compositions.

WO 2005/000903 A1